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**AGRICULTURAL MUSEUM.**

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*For the Agricultural Museum.*

**MERINO SHEEP.**

The late importations of Merino Sheep having created considerable interest among the farmers of the United States, it may not be amiss for us to enquire into the degree of esteem, in which these animals may be held abroad. The following is the extract of a letter from an American gentleman, of considerable celebrity in the agricultural world, who has lately returned from a visit to England. The letter is addressed to Mr. Custis of Arlington, and bears date 20th December, 1810.

“ Notwithstanding the present rage for Merino  
“ Sheep, with you, I have my doubts how far the pure  
“ Merino, is the best breed for our country. Even in  
“ England, many of their most eminent Agriculturalists  
“ are not satisfied of the advantage to their country,  
“ of confining their stock to that breed. Dr. Parry of  
“ Bath, has a flock he thinks so far improved, by cross-  
“ sing the Merino with the Ryeland, that he would not  
“ permit a pure Merino ram to be in his flock for one  
“ thousand guineas. Mr. Coke, the best and most exten-  
“ sive Agriculturalist in England, is crossing the Meri-  
“ no with the South Down, greatly to his satisfaction. I  
“ have been for a few years crossing the Merino with  
“ the Bakewell. A young ram sold from my flock the  
“ last year, has shorn eleven and an half pounds. The  
“ only advantage of Merino, is the fineness of wool;  
“ in quantity, staple and carcass, it is inferior to some  
“ other breeds we might propagate to the advantage

" of our country. I wish you to make an experiment  
" with a pure Merino ram and some of your best  
" Smith's Island Ewes.

" However friendly I am to domestic manufactures,  
" I am totally opposed to the mad scheme of forcing  
" manufactures by heavy duties, giving rise to great  
" manufacturing establishments, supported by wealthy  
" individuals, and tending to destroy the physical, mo-  
" ral and political character of the laborer. The great  
" manufacturing towns are sinks of corruption, mise-  
" ry and wretchedness ; such is the experience of all  
" the world, under whatever government."

Note to the above by Mr. Custis.

The importation of Merinos, may prove a real and important benefit to American œconomy if the practice of Dr. Parry, Mr. Coke and other distinguished breeders, is promptly followed in the United States. To preserve the Merino race entire, would be at once unwise, impolitic, and in many respects injurious. We have many useful native breeds, which by crossing with these valued strangers, would imbibe a sufficiency of their superior qualities to answer every necessary and ordinary purpose. At the same time, this system would rescue the native sheep from unmerited neglect, and disperse the Merino strain through all parts of our country. Again, cloths made of the pure Merino wool are only suited to the uses of the rich and luxurious. Their costly nature precludes their introduction to the humbler walks of life ; and altho' the man of fortune may indulge in the comforts of warm clothing, flannels and night-caps, his poorer neighbor will still be shivering in the horrors of nakedness and neglect.

If manufactures are wanting, they are especially wanting to the needy and distressed—a blanket is more useful than a shawl, a strong cloth more extensively useful, than a fine one. To encourage domestic establishments in parishes and townships and to discourage extensive monopolies, should form the essential policy of our

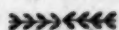


acid the Salt contains after evaporation, leave no doubt, that an exuberant source of crystallized salt exists subjacent to the stratum of rock, which constitutes the basis of the river, and probably the mountain on each side of it—I am daily confirmed in the opinion, since every attempt hitherto made to obtain this rich saline water, has been fruitful.—The contiguity of this plenteous source of salt to the Western Countries, so peculiarly adapted to cattle of every denomination, is certainly a remarkable instance of the œconomy of nature making suitable provision where she was apparently unprovided—A steel pointed borer between one and two inches in diameter is employed in piercing the various strata of rock, which compose a depth of between 25 and 30 feet.

When the instrument has perforated the silicious stratum of rock, superincumbent the salt, a strong current of bituminous inflammable air issues from the aperture, termed by an intelligent medical Gentleman, who examined it, sulphurated hydrogen gas, holding phosphorus in solution; generated, as he supposes, from digestion or decomposition of vegetable matter, enveloped by some early convulsion of nature—The proprietors of the salt works introduce a Tin or Copper tube of suitable capacity through the rock in communication with the salt, so as more effectually to exclude the river water. It is raised by pumps and conveyed into boilers, fourteen of which holding each as many gallons, constitute a furnace—Each furnace prepares fifty bushels of clean dry salt a day, which the laborers dispose of at fifty cents per bushel—The Sciota salt water is not above one fourth saturated, and that of Kanawha more than three fourths according to Dr. Smith. The latter is impregnated with some foreign matter, which renders it extremely difficult to manage, and since no pure salt can be obtained, before the water is divested of this unknown mineral, it has been a subject of industrious enquiry among the literati of the western country. Since it possesses none of those properties which characterize Iron, Tin, Copper,



Zinc, &c. some are induced to believe that it is a precious metal dissolved and holden in solution by the superabundant acid, that is drained from the salt after crystallization.—Dr. R. H. Smith of Prince Edward county has undertaken to make the analysis, and to send on the result as soon as possible, together with a cheap mode, simplifying the compound; which, if successful, will contribute much to facilitate the manufacture of a chief article of commerce in this quarter — *Richmond Enquirer*.



### HEMP.

Sketch of the manner of cultivating and preparing HEMP in Russia.

The seed is sown between the 20th of May and the end of June, when the weather is warm. Plains are the only grounds suitable for its cultivation. In countries where it seldom rains, moist lands are preferred, but not low meadow. The soil should be free and black, with six or seven inches of mould.—Other ground will not do, especially sandy soils. These will not repay the expence of culture.

Upon a surface of 540 by 420 English feet, the Russians sow five bushels and one-tenth of seed.

After once ploughing and harrowing the land, a sufficient quantity of stable manure is spread upon it, and remains upon its surface for six days. The land is then again ploughed, sown and harrowed. The same piece of ground is cultivated every year in the same manner.

Two sorts of hemp grow in every field; the female, which bears the seed, and the male which has the same look with the female, but its head is round and without seed.—When the male hemp begins to ripen, its foliage becomes white (while that of the female remains always green.) Even its stalk takes a greyish cast. The male stalks are all pulled up three weeks before the other, made into sheaves, and left standing against poles four days. They are then opened and spread upon level ground, where they remain until they come to maturi-

ty The hemp is then separated from the stalk, and produces that quality with which the Russians make coarse cloths. This kind of hemp they do not put under water.

The female hemp is pulled about three weeks after the male, as already observed. When pulled it is bound up in sheaves from five to six inches in diameter. These are placed standing against poles fixed in the ground. Thus they remain at least two days; after which they beat or thresh the sheaves to extract the seed, and beat the roots to clear them of the soil—hemp in this state is called in Russia, Molatchanka, viz. hemp beaten or threshed. In the Ukraine where the best hemp is produced, they used to cut off from the top of the stalk between seven and ten inches, and the same from the root. This they call Sitchka, or cut hemp. Of late years however, the rich proprietors only continue this mode of preparing hemp; which is thus prepared in the other provinces.

Four days after the seed is taken from the stalk, it is put in soak in either still or running water, immaterial which. The sheaves are placed in order by each other, and immersed under water of from seven to twelve feet depth, and confined in a fixed state by pieces of wood and by stones sufficient to secure them. In this situation they remain about three weeks, if the water is warm; if cold, they continue five weeks. At the end of that time a small portion is taken and dried upon an oven, or in some other way. It is then broken by hand. If the hemp separates with ease, then the residue is taken from the water. If it does not separate, it is suffered to remain until it does. When taken from the water it is placed upon heated stones, or ovens to dry. The more dry, the better; because it is then more easily detached from the pulp of the stalk.

Every year great quantities of the sheaves remain until the spring immersed in water, owing to the severe

ity of the cold. They are then taken and dried in the sun. For this purpose they are placed in an upright posture against walls or fences. The hemp taken out of the water before the frost, is called winter hemp. The first is the strongest; the other much weaker, but the last is more pleasant to the eye, on account of its being a green silver cast. Hemp does not come to maturity under four months. In its first vegetation rains are very favorable to its growth. As it approaches ripeness, dry and warm weather are most propitious to it. When the same year unites these two advantages, it is sure to excel both in quality and quantity.

An essay, on the Ground Nut, as an article from which a palatable and wholesome oil can be extracted. By Mr. A. Boucherie, of Philadelphia, in a communication to Dr. Mitchill, dated June 17. 1809.

However rich are the productions of the American continent, it was painfully acknowledged that there could not be found a fixed oil, sweet to the taste and possessing all the virtues inherent in that of the olive. It is well known that olive oil, one of the substances consecrated to the divinities of former ages, was the delight of the Greeks and Romans. Being anointed with it after bathing, it maintained the suppleness of their skin and of their muscles. Used in cookery it was an agreeable preparation for food. That oil now forms one of the richest productions of the Mediterranean shores, where the olive tree, carefully cultivated, yields an oil more or less agreeable, according to the nature of its soil, and the process used in its extraction.

Chymically considered, that substance essentially distinguishes itself by its unctuousness ; it is miscible neither in water nor alcohol. Put in contact with a fiery body it soon takes flame, and when well depurated gives a light much superior to that of tallow or wax, and which does not tire the sight. Its constituent principles are carbon about 76, and hydrogen 24 parts in the hundred.

Vainly would it be undertaken to naturalize the olive tree in the United States. It requires, with the saline air of the sea, a milder, more equal and less humid climate. Little hope then would we have of procuring to ourselves so good an oil as that of the olive, if we did not possess a precious fruit which in this country has not yet been considered in this point of view.

I know that the ground nut was a few years since cultivated in France, where they extract from it an excellent and palatable oil. Having found that fruit in the market of Philadelphia, I endeavoured to know if it could be substituted for the olive, and with a true satisfaction I experienced that it answered all my expectations.

The ground nut, which is the *Lynchi* of the Peruvians, the *Mani* of the Spaniards, and the *Araquidna* of the Botanists, grows in Brazil, Surinam, and Peru.—However, it appears not to be a native of those countries, but to have been brought there from Africa by the negroes. It is also found in the West Indies, in North and South Carolina. Undoubtedly it will equally succeed in Virginia, Pennsylvania, New Jersey, the Western States, and in all places where the summer season is constantly warm. If some differences are perceived in those several parts of the union, they result from that which may exist in the intensity and continuance of the heat which prodigiously influence the quantity and quality of the produce.

The plant does not require a fertile soil, it grows in sandy grounds, even in those exhausted. It wants but little labour, the essential part of which consists in operations sufficiently reiterated to prevent the growth of weeds.

The fruit is so well known in the United States as not to require here a description of it. A thin and friable husk unfolds two kernels covered with a pellicle or pericarpium which, as that of the almond, is taken off by immersion in warm water.



From the kernel of the ground nut I have obtained an oil perfectly sweet, as it will be acknowledged on tasting that contained in the bottle which accompanies this memoir. Its qualities render it preferable even to olive oil, which is often harsh to the taste from its aptitude to rancidity; for it is really agreeable but in few quarters of France and Italy. The ground nut, on the contrary seems to possess the oily element in its greatest purity, especially a few days after having been expressed, because some feculencies are then precipitated; but what gives to this oil a decided superiority over that of the olive is, that it does not become rancid. I kept it for a long while exposed to the action of a bright sun, without having its taste the least injured. Should it not have the faculty of combining itself with oxygen, as other oils which are eager of it, and which by that re union experience a kind of combustion? It is very probable it has not, since its taste has not the least been injured.

A light roasting undergone by the residue after a first expression, yield, by a new expression, a second oil; but this experiences the action of the caloric upon oil.

I have not been in a situation to calculate the produce of an acre of ground sown with ground nuts; but according to what is generally said by botanists, it must be considerable. I only know that the ground nut commonly gives a tenth of its weight in oil; and that very probably an eighth might be obtained if a sufficient force of compression was employed to extricate it.

Hence, it can be easily appreciated what such a culture, followed in a large way, could produce. Certainly it would be one of the richest productions of this continent.

The medicinal properties of the ground nut oil, also deserve to be carefully investigated. Not a doubt remains that it possesses all those generally belonging to the fixed sweet oils, and that it might advantageously be used as a substitute for the oil of sweet almonds, which is demulcent when newly expressed, and affords

ed from fresh almonds ; but inflammatory when the least heated by rancidity. The oil of the ground nut will be free of that inconvenience, which is often fatal to sick persons.

So many precious qualities in the ground nut must encourage its cultivation. The southern states alone, now, afford a small quantity of that fruit ; and still cultivated but by negroes, who sell it for their own profit. From thence the nuts are brought to every quarter of the continent for consumption—but hurtfully for health ; because eaten raw they occasion painful head aches ; and roasted, they are extremely inflammatory.

Let proprietors undertake this culture upon a great scale, and it will soon procure them a rich increase. The western states having no spermaceti oil will find in the expression of the ground nut, an agreeable light. Soaps superior to those coming from Europe, will be obtained therefrom, and at so cheap a price, that the soap made of tallow will soon be abandoned. Finally, after having supplied the domestic demand, the ground nut oil exported by our vessels, will obtain a good price in the West Indies, in the north of Europe, and in every clime where the olive tree does not grow.

Undoubtedly, however, it contains a quantity of mucilage, since the kernels of the ground nut triturated with water, form a perfect emulsion, like that known under the improper name of orgeat, and it wants only the aroma of the almond to be as agreeable.

The oil of the ground nut, agitated with alcohol, appears at first in an emulsive state, but shortly after these two substances follow the law of their gravities, the oil sinks, the alcohol rises ; but it remains several days in a milky state, which proves that some oil, combined with the mucilage, is suspended in it ; both, by time, precipitate themselves under the form of light white flakes. But what deserves to be observed in this experiment, is that the oil so resting in contact with the spirit of wine, becomes absolutely colourless ; which

would induce a belief that the last takes off a little resinous part which lightly colours it in its natural state. The action of alcohol upon the ground nut oil is peculiar to it, and does not take place in oils expressed from other seeds.

Pure soda combined with the ground nut oil renders it soapy ; whence it results, that well treated with a caustical ley, it would make a soap of superior quality.

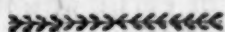
The oil, by its fine and pure taste might be advantageously substituted in cookery for that of olive.

The dregs of the ground nut, after the expression by which it yields the oil, make very good food for pigs and turkeys, who are extremely fond of the fruit, which fattens them.

### Process for the extraction of the Oil of the Ground Nut.

The ground nut must be separated from the friable husk that enfolds it, and which is very easily done. It appears that it would be enough to thresh it with flails as corn, and to winnow it afterwards. The least pressure between two mill stones, will also be sufficient for the purpose.

The kernel may easily be bruised like paste between two mill stones, the one turning vertically upon another horizontally placed. Linen bags filled with the paste should be submitted to the action of a strong press acting perpendicularly. The wedge mill or Dutch mill might be used with equal success.



*On the Analysis of Soils, as connected with their Improvement.* By HUMPHREY DAVY, Esq. F. R. S.

**From the Communications of the Board of Trade.**

### Utility of Investigations relating to the Analysis of Soils.

The methods of improving lands are immediately connected with the knowledge of the chymical nature of soils, and experiments on their composition appear capable of many useful applications.

The importance of this subject has been already felt by some very able cultivators of science ; many useful facts and observations with regard to it have been furnished by Mr. Young ; it has been examined by Lord Dundonald, in his treatise on the connexion of Chymistry with Agriculture, and by Mr. Kirwan in his excellent essay on Manures ; but the enquiry is still far from being exhausted, and new methods of elucidating it are almost continually offered, in consequence of the rapid progress of chymical discovery.

In the following pages I shall have the honour of laying before the Board, an account of those methods of analysing soils, which appear most precise and simple, and most likely to be useful to the practical farmer ; they are founded partly upon the labours of the gentlemen whose names have been just mentioned, and partly upon some later improvements.

## II. *Of the Substances found in Soils.*

The substances which are found in soils, are certain mixtures or combinations of some of the primitive earths, animal and vegetable matter in a decomposing state, certain saline compounds, and the oxide of iron. These bodies always retain water, and exist in very different proportions in different lands ; and the end of analytical experiments is the detection of their quantities and mode of union.

The *earths* found in common soils, are principally *silex*, or the earth of flints, *alumine*, or the pure matter of clay, *lime*, or calcareous earth, and *magnesia*.

*Silex*, or the earth of flints, when perfectly pure, appears in the form of a white powder, which is incombustible, infusible, insoluble in water, and not acted upon by common acids ; it is the substance which constitutes the principal part of rock chrysal ; it composes a considerable part of hard gravelly soils, of hard sandy soils, and of hard stony lands.

*Alumine*, or pure clay, in its perfect state, is white like *silex* ; it adheres strongly to the tongue, is incombustible, insoluble in water, but soluble in acids, and in fixed



alkaline menstrea. It abounds most in clayey soils and clayey loams; but even in the smallest particles of these soils it is usually united to silex and oxide of iron.

*Lime* is the substance well known in its pure state under the name of quick lime. It always exists in soils in combination, and that principally with fixed air or carbonic acid, when it is called carbonate of lime; a substance which in the most compact form constitutes marble, and in its looser form chalk. Lime, when combined with sulphuric acid (oil of vitriol), produces sulphate of lime (gypsum), and with phosphoric acid, phosphate of lime. The carbonate of lime, mixed with other substances, composes chalky soils and marles, and it is found in soft sandy soils.

—*Magnesia*, when pure, appears as white, and in a lighter powder than any of the other earths; it is soluble in acid, but not in alkaline menstrea; it is rarely found in soils; when it does exist, it is either in combination with carbonic acid, or with silex and alumine.

*Animal decomposing Matter* exists in very different states, according as the substances from which it is produced, are different; it contains much carbonaceous substance; and may be principally resolved by heat into this substance, volatile alkali, inflammable aeriform products, and carbonic acid; it is principally found in lands that have been lately manured.

*Vegetable decomposing Matter* is likewise very various in kind, it contains usually more carbonaceous substance than animal matter, and differs from it in the results of its decomposition, principally in not producing volatile alkali; it forms a great proportion of all peats; it abounds in rich mould, and is found in larger or smaller quantities in all lands.

The *saline compounds*, found in soils are very few, and in quantities so small, that they are rarely to be discovered. They are principally muriate of soda (common salt), sulphat of magnesia (Epsom salt), and much

ate and sulphate of potash, nitrate of lime, and the mild alkalies.

The *oxide of Iron* is the same with the rust produced by exposing iron to the air and water ; it is found in all soils, but is most abundant in yellow and red clays, and in yellow and red siliceous sands.

A more minute account of these different substances would be incompatible with the object of this paper. A full description of their properties and agencies may be found in the elementary books on chymistry, and particularly in the system of chymistry, by Dr. Thompson (2d. edit.), and in Henry's epitome of Chymistry.

### III. *Instruments required for the Analysis of Soils.*

The really important instruments required for the analysis of soils are few, and but little expensive. They are a balance capable of containing a quarter of a pound of common soil, and capable of turning, when loaded with a grain ; a series of weights from a quarter of a pound Troy to a grain ; a wire sieve, sufficiently coarse to admit a pepper corn through its apertures ; an Argand's lamp and stand ; some glass bottles ; Hessian crucibles ; porcelain, or queen's-ware evaporating basins ; a Wedgewood pestle and mortar ; some filters made of half a sheet of blotting-paper, folded so as to contain a pint of liquid, and greased at the edges ; a bone knife, and an apparatus for collecting and measuring aeriform fluids.

The chymical substances of re-agents required for separating the constituent parts of the soil, are muriatic acid (spirit of salt), sulphuric acid, pure volatile alkali dissolved in water, solution of prussiate of potash, soap lye, solution of carbonate of ammoniac, of muriate of ammonia, solution of neutral carbonate of potash, and nitrate of ammoniac. An account of the nature of these bodies, and their effects, may be found in the chymical

works already noticed ; and the re-agents are sold, together with the instruments mentioned above, by Mr. Knight, Foster-lane, Cheapside, arranged in an appropriate chest.

*To be continued.*

The re-agents may be obtained at either of the Apothecary Shops in this town.

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*To the Editor of the Agricultural Museum.*

SIR,

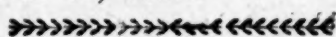
Having lately got into my possession a piece, directing how we may totally destroy the Hessian Fly, which so often affects our crops of wheat, I feel anxious to let others reap the benefit that may arise from the same, therefore wish you (if you think proper) to give it a place in your Museum. It was inclosed in a letter directed to a gentleman in this place from a Mr. Clark living beyond the city of New-York, where, he says, experiments had been made and proved effectual. The piece came in print, and reads thus:—"In order to prove the existence of the Hessian Fly in wheat, take a magnifying glass, and examine the grains, and you will find near the sprout, or chit, from one to six or seven small dark coloured specks, or nits, which it is supposed come to maturity as soon as the wheat begins to grow, and increase with the wheat; and on examining the stalk, by stripping the leaf after it is well up, the insects may be discovered concealed by the joints. They are of a very small, white, round, maggotty appearance; but as they advance to change to the fly state, they become much darker, resembling the colour of flax seed. It is when they are in the maggotty state, they do so much mischief to wheat—as soon as they become dark, they begin to change to the fly state. It is remarkable, that flour made of wheat having this nit or egg in it is dark coloured. In order to destroy the insect, without injuring the wheat for seed, take about one peck of slacked lime—put it to about thirty gallons of boiling water, then stir it well, until it is not quite scalding hot; then put one bushel of wheat into a large sieve or riddle, and pour the water on it, over a tub or other vessel.

and immediately throw the wheat on a floor, vat, or tub, and roll it in Plaister of Paris as long as any will stick to it; as soon as the wheat is thus prepared, it is fit to sow, and it will be best to prepare as much in the morning as is intended to be sown in the day.—In addition to the destruction of the insects, wheat thus prepared is found to come up sooner, and grow faster, and will doubly pay the expence and trouble of the preparation. Altho' the above prescription will prevent the destructive effects of the Fly to the Wheat, while growing, yet the insects that may come from other Wheat in the neighbourhood, may impregnate the grain that may be produced from the seed thus prepared; but, by a repetition of the above process, it will be found that, in two or three years, they will be entirely extinct.

I am yours respectfully,

HENRY HAMPTON.

Buckland, Va. Jan. 16, 1811.



#### TO FARMERS.

Having been informed of the advantages of using the tops of Indian Corn cut as rye straw, to be mixed with potatoes or meal, as a food for horses or cattle, I have been making the experiment during the present year. I find that my cattle thrive better on this fodder, than on rye straw, cut and used in the same manner. The corn stalk certainly contains a quantity of farine substance, and therefore must be highly nutritive. Being cut and scalded with a small quantity of bran, they afford an excellent mess for milch cows. In the common way of foddering cattle with corn tops, the blades are greedily eaten, but the stalks are wasted. By adopting the plan recommended, the whole affords a nutritive food.

*Maryland Repub.*

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